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normal development of the primordia and the compound sporophores, the blue-violet end of the spectrum being the only stimulating portion. In many cases the mycelia remained absolutely sterile when kept in darkness or when exposed only to yellow light.

In his preface to Heft VII the indefatigable author promises to return to the smuts in Heft IX and to the *Ascomycetes* in X and the following Heften. We trust he may be spared life and daylight to the completion of his great task, the material for which he tells us is already in good part accumulated and only remains to be put into proper shape.—ERWIN F. SMITH.

MIYABE, KINGO. *On the life history of Macrosporium parasiticum*, Thüm. *Annals of Botany*, February, 1889.

The investigations, the results of which are set forth in this paper, were carried on at Harvard University under the direction of Dr. Farlow, the material for study, consisting of onion plants, having been sent to him from Bermuda. Without going into the details of the work it may be said that Mr. Miyabe concludes that *Macrosporium parasiticum*, Thüm., is the same as *Macrosporium sarcinula*, Berkeley, and that both of these so-called species are merely forms of the common *Pleospora herbarum*. He further shows that there are only two forms of the *Pleospora*, i. e., the *ascosporous* and the *Macrosporium*, and remarks in his recapitulation that the presence of pycnidia is very doubtful, and may have disappeared from the fungus cycle of development altogether. It is shown that the formation of the perithecia is not attended by any sexual act, and finally that the *Macrosporium*, contrary to the usual belief, is a true parasite, having power of developing within the tissues of plants not previously injured by fungi or other causes.—B. T. GALLOWAY.

LAGERHEIM, G. *Ueber einige neue oder bemerkenswerthe Uredineen*. *Hedwigia* Band XXVIII, Heft 2, p. 103.

In this paper are given the results of some recent observations on several genera of *Uredineæ*, the first of which is *Diorchidium*. This genus, according to the author, was established by Kalchbrenner in 1883 from specimens occurring on *Milletia caffa*, collected at Port Natal, South Africa. It differs from *Puccinia* in having teleutospores divided by perpendicular or oblique instead of horizontal cross-walls. Soon after the attention of mycologists was directed to this peculiar genus, new species were found, the first among these being *Diorchidium lavei*, Sacc. & Bizz., on *Manisurus granulis* from Brazil, and *Diorchidium pallidum*, Winter, on an undetermined host plant from the same place. Later, De Toni in *Sylloge* VII, p. 736, referred *Triphragmidium binatum*, Berkeley, on an undetermined host plant from Nicaragua, and *Puccinia verti-septa*, Tracy & Galloway, on *Salvia ballataeflora*, from New Mexico, to the same genus. In the case of *D. pallidum* and *D. verti-septa* uredo-

spores were described as occurring with the teleuto form, but of the remaining three species only the latter stage was observed. In one of these, *D. leve*, S. & B., on *Manisurus granulis*, the author has recently discovered the uredo form, which he describes as occurring abundantly on both sides of the leaves. The sori are scattered and give to the surrounding parts a reddish or yellowish hue. The spores are roundish or ovate, 24–30 $\mu$  in diameter, and are more or less spiny. Teleutospores of this species were very scarce. They are roundish or ovate, greatly enlarged at the apex and often somewhat concave. The author concludes his remarks on this genus by saying that it is certainly closely related to *Puccinia*, the only difference, so far known, being the position of the septum, which is never constant.

Following the foregoing observations are notes on a new variety of *Puccinia Schneideri*, Schr  t.; *Puccinia rubefaciens*, Johans.; *Puccinia silphii*, Schw.; *Puccinia Seymeriae*, Burr.; *Puccinia ribis*, D. C.; *Puccinia oxyria*, Fekl.; *Uromyces Holwai*, n. s.; *Uredo arcticus*, n. s., and *Caoma nitens*, Schw.

*Uromyces Holwai* was collected at Ann Arbor, Mich., by Mr. E. W. D. Holway on *Lilium superbum*. Both the uredospores and teleutospores occur at the same time, appearing on both sides of the leaf. The *Æcidium* was not found. The uredospores are roundish, spiny, and are 20–26 $\mu$  in diameter. The teleutospores resemble in every respect those of *U. erythronii*, (DC.), excepting that they are of a somewhat lighter color and have a thicker apex. In speaking of *Caoma nitens* the author cites the opinion of several writers as to the probable connection of this fungus with other *Uredineae* occurring upon *Rubus*, concluding his remarks by a reference to Allescher's paper, published in Bot. Centralblatt, No. 48, 1888, in which it is shown that the *Caoma* is an isolated form.—B. T. GALLOWAY.

FLOWRIGHT, CHARLES R. *A Monograph of the British Uredineae and Ustilagineae.*

The appearance of this book was gladly welcomed by American botanists, although it does not deal with distinctively American species. It fills a need long felt by workers in this special field by combining in a convenient form the history, biology, morphology, classification, and economics of the rusts and smuts. The economic features are not directly treated in detail, but every portion abounds in notes and suggestions that can be applied to this phase of the subject, and the chapter on infection bears directly upon it.

The first part of the book comprises chapters on the biology, mycelium, spermatogonia, aecidiospores, uredospores, teleutospores, and heterocism of the *Uredineae*; on the mycelium, formation of the teleutospores, and germination of the teleutospores of the *Ustilagineae*; on infection of host plants by the *Ustilagineae*; spore culture, and artificial infection of plants.